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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,384	12/06/2001	Gary F. Feierbach	04860P2679	2221

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EXAMINER

DATSKOVSKIY, MICHAEL V

ART UNIT	PAPER NUMBER
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2835

DATE MAILED: 07/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/020,384

Applicant(s)

FEIERBACH, GARY F.

Examiner

Michael V Datskovskiy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5,7,9-13,15-23,25-29,31-35,42,43,45 and 46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5,7,9-13,15-23,25-29,31-35,42,43,45 and 46 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, "the means for positioning said electronic or electrical device proximate a conduit having a flexible channel attached thereto" (claim 42, and 43, 45-46 as dependent on claim 42) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 29 and 35 are objected to because of the following informalities:
Claims repeat already existing in the parent claims 1 and 33 respectively structural limitation. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 42-43, 45-46 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Nowhere in the specification or in the drawing applicant provided support for the structural limitation: "the means for positioning said electronic or electrical device proximate a conduit having a flexible channel attached thereto" (claim 42 and dependent claims 43, 45-46).

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-3, 7, 10-11, 16, 18-19, 21-23, 29, 31, 42, 45 (claims 42 and 45 as best understood by examiner) are rejected under 35 U.S.C. 102(b) as being anticipated by Yamamoto et al (US Patent 4,729,060).

Yamamoto et al teach a cooling device 10, Figs.1, 11, for removing heat from an integral circuit (IC) 7, said cooling device comprising: a conduit 1; a sealed flexible channel 5 having a first open end and a second thermally conductive closed end 3, said flexible channel is made of a resilient material having spring-like characteristics and providing a spring-like restoring force when compressed, said second end thermally conductive material (copper) having a substantially planar surface to interface directly with said IC 7 when said flexible channel is extended; an interconnect openings between said flexible channel and said conduit to allow a fluid to move between said conduit and said flexible channel; and a port for coupling to a pump 25 coupled to said conduit 1. Yamamoto et al teach furthermore a heat sink 75 having plurality of flow diverters—a plurality of spaced apart planar fins 77, said heat sink being attached to an interior surface of said closed end 3 to conduct heat absorbed by said closed end through said heat sink to said cooling fluid contained within said conduit 1 and said flexible channel 5. Yamamoto et al teach furthermore said resilient material could be pleated (co. 4, line 44).

7. Claims 1 and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Novotny (US Patent 5,206,791, previously cited).

Novotny teaches a cooling device, Figs.1-4, for removing heat from an integral circuit (IC) 12, said cooling device comprising: a conduit 14; a sealed flexible channel 10

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having a first open end and a second thermally conductive closed end 11, said flexible channel is made of a resilient material having spring-like characteristics and providing a spring-like restoring force when compressed, said second end 11 having a substantially planar surface to interface directly with said IC 12 when said flexible channel is extended; an interconnect openings between said flexible channel and said conduit to allow a fluid to move between said conduit and said flexible channel. Novotny teaches furthermore a heat sink having plurality of flow diverters →a plurality of spaced apart planar fins 20, said heat sink being attached to an interior surface of said closed end 11 to conduct heat absorbed by said closed end through said heat sink to said cooling fluid contained within said conduit 14 and said flexible channel 10. Novotny teaches furthermore said conduit 14 is a heat pipe connected to a reservoir 19 containing said fluid.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 4, 9, 17, 27-28, 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al.

Yamamoto et al teach all the limitations of the claims except certain types of materials used to couple said flexible channel to said conduit (claim 4), or to make said flexible channel (claim 9); and certain ranges of the cooling fluid pressure to manipulate

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expanding of said flexible channel (claims 17, 27-28 and 43). It would have been obvious to one having ordinary skill in the art at the time the invention was made to make said closed end heat sink and said flexible channel from such claimed materials, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice, (*In re Leshin*, 125 USPQ 416), and also it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

10. Claims 5, 11-13, 15, 20, 25-26, 45-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al as applied to claims 1, 42 above, and further in view of Grunfeld (US Patent 5,847,366, cited in the previous Office Action). Yamamoto et al teach all the limitations of the claims except when said pump reduces a cooling fluid pressure (produces some range of vacuum pressure), said flexible channel compresses and removes from said IC and when said pump increases a cooling fluid pressure said flexible channel expands and moves toward said IC to contact it and to dissipate a generated heat; and said fluid could be heated (claim 20). Grunfeld teaches a cooling device 10, Figs.1-8, for removing heat from an integral circuit (IC) 214, said cooling device comprising: a conduit 20, 22; a sealed flexible channel 12 having a first open end and a second thermally conductive closed end 14, said flexible channel is made of a resilient material having spring-like characteristics and providing a spring-like restoring force when compressed, said second end having a substantially planar surface to interface directly with said IC 214 when said flexible channel is extended; an

interconnect openings between said flexible channel and said conduit to allow a fluid to move between said conduit and said flexible channel. Grunfeld teaches furthermore when a pump 226 reduces a cooling fluid pressure (produces some range of vacuum pressure), said flexible channel compresses and removes from said IC and when said pump increases a cooling fluid pressure said flexible channel expands and moves toward said IC to contact it and to dissipate a generated heat; and said fluid could be heated (col.6, lines 51-64). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use an existing fluid pump in the device by Yamamoto et al to extend or compress a flexible channel in the device by Yamamoto et al as it is shown in the device by Grunfeld in order to facilitate removal of the electronic device. It would also have been obvious to one having ordinary skill in the art at the time the invention was made to heat fluid in the device by Yamamoto et al as it is shown in the device by Grunfeld in order to regulate temperature of the system. Regarding to the claims 12, 13, 26 and 46: Yamamoto et al and Grunfeld teach all the limitations of the claims except certain ranges of the cooling fluid pressure to manipulate compressing of said flexible channel. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

11. Claims 32-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Novotny as applied to claims 1 and 32 above, and further in view of Hisano et al.

Novotny teaches all the limitations of the claims except said conduit as a heat pipe comprising a wicking material. Hisano et al teach a cooling device, Fig. 29, for removing heat from an integral circuit 1 (IC), said cooling device comprising: a conduit 81b; a sealed flexible channel 81a having a first open end and a second thermally conductive closed end 82, said flexible channel is made of a resilient material, said second end thermally conductive material having a substantially planar surface to interface directly with said IC 1; an interconnect openings between said flexible channel and said conduit to allow a fluid to move between said conduit and said flexible channel 81a; wherein said conduit 81b is a heat pipe comprising a wicking material (col.18, lines 19-22). It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ a heat pipe comprising a wicking material, as Hisano et al show it, in the device by Novotny in order to enhance heat dissipation by the heat pipe.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael V Datskovskiy whose telephone number is (571) 272-2040. The examiner can normally be reached on 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on ((571) 272-2044. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


07/09/04

Michael V Datskovskiy
Primary Examiner
Art Unit 2835